

APPENDIX N: TRANSPORTATION PLAN

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Introduction

This transportation plan has been developed to facilitate the planning of road, pipeline and electric transmission line construction in the CD-C project area, and to provide an assessment of all existing and future road and pipeline development and use in the project area. This plan is an expansion and extension of the existing transportation plan in place for the Continental Divide/Wamsutter II EIS.

The transportation planning area (TPA) for this project includes the CD-C project area plus adjacent areas that include roads that may be used to access the project area. This includes Interstate 80, county, BLM, and undeveloped roads/routes on and adjacent to the project area.

The objective of this transportation plan is to enable the BLM, in cooperation with other entities including Operators, permittees, and local agencies, to better facilitate planning and road/pipeline/transmission line design and construction.

This plan includes a brief description of the existing road network (**Map N-1**) and the identification of proposed high traffic volume roads and corridors. Relevant requirements for road construction or reconstruction and the development of road maintenance agreements, rights-of-ways (ROWs), and maintenance are also identified and outlined in this plan.

This plan also applies to the transportation of gas, condensate, or water via pipelines and electric power transmission within the CD-C project area. Pipelines and power lines within the CD-C will generally be located adjacent to roads or existing pipelines to reduce surface disturbance. In instances where locating pipelines adjacent to existing disturbance would lead to increased environmental impacts, pipelines may be located along alternate routes that would result in fewer impacts.

Some existing roads within the CD-C project area are under the jurisdiction of the governmental agencies (e.g. BLM, Sweetwater and Carbon counties) that approved their designs and require their maintenance. Roads under private easements between Operators and private landowners may or may not have maintenance requirements or agreements. In addition, there are many non-oil and gas routes that are not maintained. Oil and gas field roads may also be under the jurisdiction of government agencies; however, maintenance of these roads is generally the responsibility of the Operators.

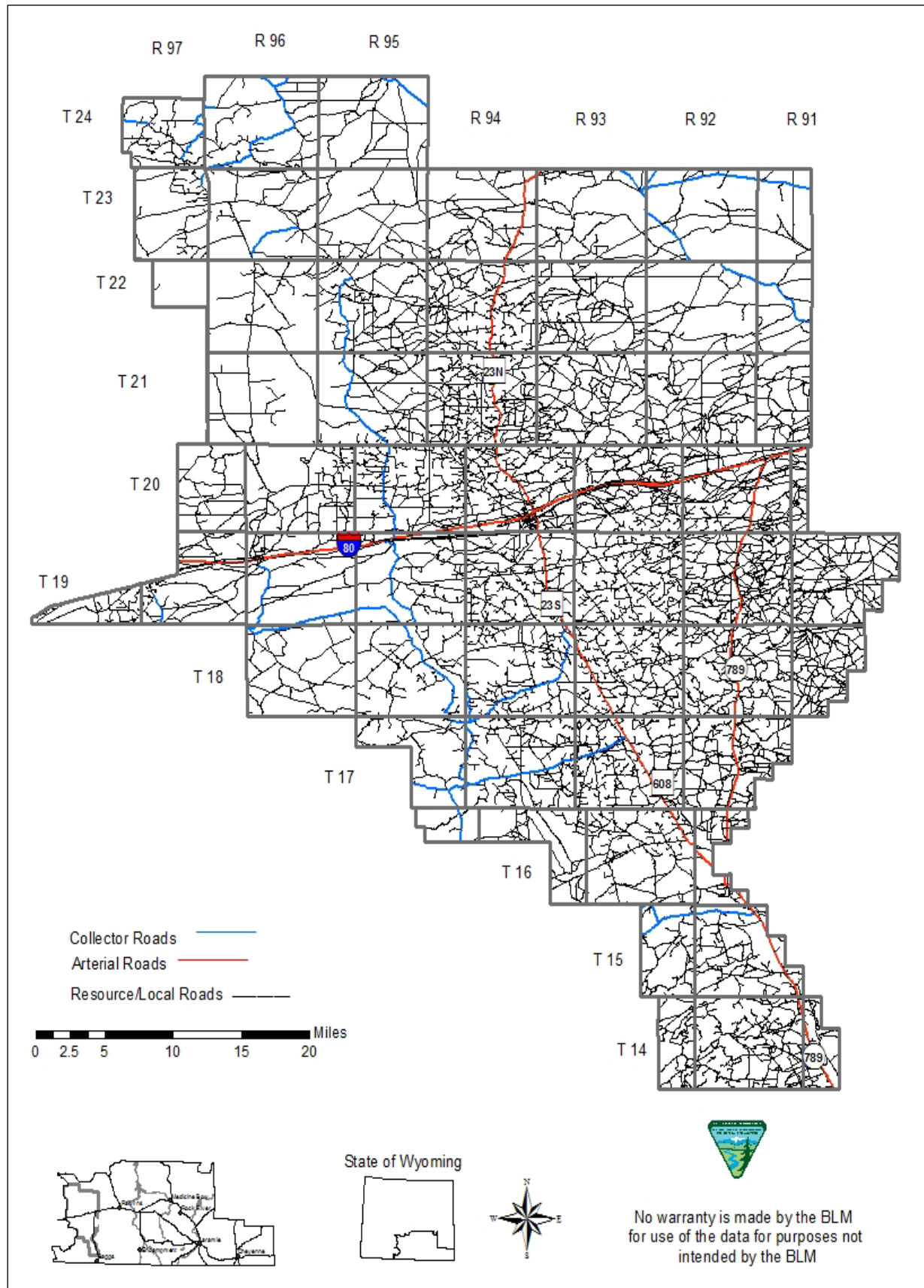
Existing and Proposed Transportation Needs

Interstate 80 is the primary access to the entire CD-C project area. Other paved roads include State Highway 789 and sections of two county roads. The majority of the roads in the project area, including BLM roads, are not paved and are generally either gravel, aggregate or native material. These roads may become impassable when wet or during winter, and if these roads are used as access for the project they would require improvements and continued maintenance.

County roads provide public access across privately owned land; however, BLM roads or other roads that cross private lands may not have public access. Most of the roads that are not paved highways or county roads would require ROWs for access and would require improvement or reconstruction before project use. In addition, some realignment of these routes may occur to minimize impacts to sensitive resources, ensure safety, and maximize traffic flow efficiency.

The existing road and pipeline network with the major arterial roads is depicted on Map 1. The principle current use of these and other roads in the area is for oil and gas related traffic; however, other users include grazing permittees, recreationists, and the general public. Undesignated two track roads/routes may also be used to access the area; these routes are used primarily by permittees and recreationists.

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Map N-1. Existing Road Network in the CD-C Project Area

Additional access roads will be constructed as necessary and specified in the annual operational updates; where these new routes duplicate existing two-track roads/routes, the upgrade of the existing two-track route should be considered prior to disturbance. When the use of existing two-track roads/routes is not feasible or would add to detrimental impacts, alternative routes should be considered and the existing two-track would be closed and reclaimed after consultation with the affected counties, private landowners and grazing permittees. At field abandonment, many roads are anticipated to be reclaimed unless there is an identified need for the road by the affected counties and other area users. Reclamation activities will be addressed with Transportation Planning Committee (TPC) members during annual planning.

Transportation Network Use

When planning transportation facilities, four transportation stages can be identified within the system and are listed below. Any stage may be eliminated if not necessary; however, each stage is handled by a separate facility designed specifically for its function.

1. Main movement – Interstate 80 and state highways for equipment, materials and workers with destinations terminating in the CD-C project area;
2. Transition – exits, turnout lanes, places where there is a change in travel speed;
3. Distribution/collection – county roads, oil and gas field unit, or ranch and recreation access roads;
4. Terminal access – well location access roads and resource roads.

Problems, such as congestion, at traffic stage changes are not anticipated due to the relatively low volume of expected traffic (need to update the table to show current AADT). The distribution by distance of traffic stage changes within the CD-C also eliminates the probability of congestion when vehicles turn from collector or local roads to well access roads. Although overall traffic volumes on CD-C roads would likely remain relatively low, heavy vehicles would use the roads throughout the life of the project, which will require road upgrades and continued maintenance. Proper road construction and maintenance will occur with the implementation of this plan.

Localized construction and drilling activity would temporarily place heavy demands on road servicing. Traffic demands would be high in areas where drilling and completion activities are occurring, but would be minimal in other areas of the CD-C. Once all wells have been completed, traffic requirements would be minimal for the remainder of the life of the project, but well and infrastructure access roads would still be in use until all wells in the area are abandoned and disturbed areas reclaimed. Maintenance of roads remaining in the area after field abandonment would be the responsibility of non-oil-and-gas entities.

Ultimate Road Disposition

When the field is ready for abandonment, the transportation network within the TPA would be reclaimed to specifications developed during approval of individual projects and the annual planning process. Roads may be identified for retention during the annual planning process; resource roads that are deemed necessary by the BLM for other area users may also be retained. County and BLM roads would likely be retained in an upgraded status; all other local/collector roads potentially developed as access roads for this project are likely to be entirely reclaimed or returned to conditions similar to those occurring in the area prior to oil and gas development activities. Road use following field abandonment would likely be limited to grazing management, recreation, and other general public. Responsibility for maintenance of roads would revert back to the counties, private landowners, or the BLM. A determination regarding the extent of post-project road maintenance (e.g. winter snow removal) on the TPA cannot be determined at this time, as the level of future area use is unknown. Decisions as to maintenance will be made during the later years of the project and will be based on TPC and public input received during annual update reviews.

Annual Planning and Operational Updates

To accommodate the uncertainty regarding proposed well locations and associated well productivity, future transportation routes within the TPA would be developed incrementally as wells are developed and associated information on Operator transportation requirements becomes available. Representatives of the BLM, Operators, counties, Wyoming Department of Transportation, landowners, grazing permittees, recreationists, and other interested groups or individuals will be involved in the annual planning process and will comprise a Transportation Planning Committee (TCP) that will be responsible for overall transportation planning and for identifying and considering issues and concerns. Subcommittees will be established for the resolution of site-specific issues.

Annual transportation planning generally would be done to determine the location, maintenance, and design criteria for roads developed in the area. This process would involve annual Operator projections for well and ancillary facility developments, public input, and updates on sensitive resources. With this information, the (TCP) would assist in designing a road network that accommodates Operator and other area users' needs, minimizes potential impacts to environmental resources, and maximizes traffic flow efficiencies commensurate with existing and potential needs.

The existing transportation network in the area is sufficient for existing uses; however, with the addition of 8,950 wells, changes to the existing network will be required. Geographic Information System (GIS) will be used to assist in the annual updating of the transportation network as appropriate. Maps would be updated to incorporate new sensitive resource locations, approved proposed roads, wells, pipelines, and ancillary facilities. In addition, existing roads designated for reclamation would be identified in consultation with the TCP. This process would result in minimizing the road densities in the area while accommodating all land user requirements.

Operators would submit, for committee review, annual operational updates. Information that may be included in these updates includes, but is not limited to, the following:

- Location of existing wells, roads, pipelines, power lines;
- Location of proposed development areas with as much detail as possible;
- Location of all roads and wellpads to be reclaimed within the next year;
- Anticipated traffic volumes for all existing and proposed developments;
- Identification of existing roads that require upgrades to accommodate existing and proposed traffic requirements;
- Identification of existing and required maintenance, ROW, and cooperative agreements for project required roads;
- Surfacing material source locations for road construction, upgrades, and maintenance;
- Location of sensitive resources and environmental obstacles; and
- Other identified transportation issues.

Final road location and design criteria for roads which either cross federal lands or are associated with federal wells would be included in the Application for Permit to Drill (APD) and/or ROW applications and would be subject to independent environmental reviews and National Environmental Policy Act (NEPA) analysis conducted by the BLM. Some modifications to proposed road locations specified in annual updates likely would occur as a result of these environmental analyses. Once a road has been constructed, its final location would be identified on maps provided in the annual operational updates. During the later years of the project, it is anticipated that annual updates primarily would identify well locations, ROWs, and other disturbances designated for abandonment and reclamation. Road upgrades for primary access routes would likely remain, and most resource roads developed for this project probably would be reclaimed unless they are determined necessary for other area users as identified during annual planning.

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Table N-1. Annual Update Responsibilities and Dates

Action	Responsibility	Approximate Submittal / Completion Date
Provision of information regarding annual proposed well, road, and facility locations with traffic requirements; major pipeline and power line projects; road upgrades; landowner concerns; other issues	Operators, TPC, BLM, landowners, and other cooperators	Mid-October
Development of agenda; evaluation of proposed plans; preparation of updated maps; and review of updates and other issues	TPC, BLM, Operators	Late October / early November
Meeting to review development plans and associated issues	TPC, BLM, Operators, landowners, and other cooperators	Early November
Resolution of issues by TPC	TPC, BLM, Operators, landowners, and other cooperators	November / December
Final update completion/meeting to discuss resolution measures	TPC, BLM, Operators, landowners, and other cooperators	Early January

ATTACHMENT A: TRANSPORTATION PLAN TECHNICAL SUPPORT DOCUMENT**Introduction**

This Transportation Planning Technical Support Document (TPTSD) has been prepared as part of a proposal by oil and gas operators (Operators) in the Continental Divide-Creston (CD-C) project area to develop public and private natural gas resources. This document is the implementation document for Appendix N, Transportation Planning. The TPTSD provides guidance for future transportation development in the CD-C area such that impacts to the existing transportation system and area resources associated with future oil and gas-related exploration and production transportation planning are avoided or minimized.

This TPTSD serves as a technical support document for the EIS and considers issues and concerns identified by the Transportation Planning Committee (TPC) identified in Appendix N. This document is intended to be a progressive/working document that is updated on an annual basis or as necessary during project development to detail specific localized transportation networks and resource maps, thereby providing current information for future development. The TPTSD also serves as a quality assurance/quality control program for the location, design, construction, maintenance, and abandonment of facilities required for the expansion of natural gas operations in the CD-C project area. The design and construction of roads, pipelines, and power lines (known as linear features) in the area would provide an adequate transportation system for the development and use of natural resources, as well as protection of the environment and user safety.

Geographic Information System (GIS) would be used to assist in the annual updating of the transportation network as appropriate. Maps would be updated annually to incorporate new information (e.g. sensitive resource locations and existing and proposed road, well, pipeline, and ancillary facility locations).

Objectives and Scope

The objective of this TPTSD include the identification of:

- Existing roads;
- Future roads and corridors;
- Existing natural gas pipelines/power lines and future pipeline development; and
- Transportation obstacles (e.g. Interstate-80, steep terrain, drainages) and environmentally sensitive areas.

In addition, road maintenance agreements (RMAs), road specifications, and erosion control methods are discussed.

This plan also applies to the transportation of gas, condensate, and water via pipelines and electric power transmission (power lines) within the CD-C project area. Pipelines and power lines would generally be located adjacent to roads to reduce the total amount of new surface disturbance. However, this practice may complicate road route selection and, in some instances, lead to increased environmental impacts. If increased environmental impacts are anticipated, pipelines and power lines may be located along alternate routes, and these routes would be evaluated and sited to minimize environmental impacts.

Roads that provide access to the CD-C project area are under the jurisdiction of private landowners and governmental agencies who approve their designs and require their maintenance.

Development outside of the CD-C project area is not discussed in this document.

Transportation Planning Area

The Transportation Planning Area (TPA) for this TPTSD includes the CD-C project area and adjacent roads which may be used to access the project area. This includes I-80, U.S. Highway 287, State Highway 789, and county, private, BLM, and undeveloped roads/routes on and directly adjacent to the project area (see **Map N-1**).

The primary arterial roads that serve the CD-C project area include I-80, SH 789, and county roads. There are numerous existing BLM roads and many undesignated routes (i.e. undeveloped two-tracks) in the area. Existing roads are those that have been previously constructed or maintained as a single-lane road or wider, and which supports truck traffic. Seismic trails and existing two-track trails are not considered existing roads.

Future resource roads (i.e., low-volume traffic roads) are not specifically identified in this document due to the lack of site-specific details for the proposed project. Resource roads and future local roads would be identified through the localized area transportation planning process based on the Operators' annual projects and would be specified in future updates to this document. Many of the existing casual routes within the CD-C project area may be upgraded and used for natural gas development activities.

Because the CD-C project is an infill natural gas development, the construction of large arterial roads is not anticipated. Rather, the development of shorter access roads to individual wellpads from existing arterial and resource roads will constitute the majority of new road construction.

Natural obstacles (e.g. topographic challenges, poor soils, sensitive resource, dry lake beds, low-lying areas, drainage channels, and rock outcrops) throughout the TPA pose problems for the construction and maintenance of linear features. Additional areas of concern would likely be identified during annual operation updates and associated planning and during APD and ROW application review processes. Linear features will avoid identified obstacles, when practicable, in order to minimize resource conflicts.

Most soils within the TPA have limitations for road construction, pipeline construction, and reclamation. See **Section 3.3** of the Final EIS for more information on soils within the project area.

Road Classifications

Road classification is the process of grouping roads having like characteristics into distinct categories and can define the administrative and jurisdictional characteristics of each road classification. This classification will help identify road types and jurisdictional responsibilities by defining public roads administered by the state and county agencies and management roads as administered by private and public land managers.

The following functional classifications are based on the BLM Manual Section 9113, Roads (BLM 1985).

Arterial (public roads): Arterial roads serve large areas and are considered public roads. Arterial roads within the CD-C project area include Wyoming state highways and Sweetwater and Carbon County roads. These roads are heavily traveled routes connecting developed areas of the CD-C project area to I-80, railroad crossings, industrial developments, services, and residential areas. State roads can be considered all-weather roads, and use of these roads is controlled by the Wyoming Department of Transportation (WYDOT). County roads may or may not be considered all-weather roads and are controlled by either Carbon County Road and Bridge or Sweetwater County Road and Bridge.

Collector (management roads): Collector roads serve smaller areas than arterial roads and may be divided into major and minor categories. Collector roads channel moderate to heavy traffic to and from the arterial system.

- Major collector: A developed road with recorded easements that provides public and industry access to the CD-C project. Generally, major collector roads would be BLM roads that are a permanent

part of the BLM road system, and may be controlled by the BLM. A county road would be classified as a major collector if it supports only occasional use.

- **Minor collector:** A developed road with an authorized ROW issued by private landowners, the BLM, or other land managers. These roads may include public-use rights, but use of these roads is at the discretion of the landowners and agencies. Portions of minor collector roads may have specific enforceable access restrictions.

Collector road maintenance objectives include the maintenance and improvement of drainage, road surfacing, and road grading to a smooth, compact surface.

Local (management roads): Local roads normally serve smaller areas than collector roads, channeling light to moderate traffic to a collector or arterial system. Local roads may support very heavy off-highway loads. Authorization for the use of local roads is at the discretion of the landowner or agencies. Local roads within the CD-C project area would serve specific groups of wells, services, or support facilities, and these roads may become a permanent part of the larger road system. Maintenance objectives would include maintaining drainage, surfacing selected segments, or road-surface grading.

Resource (management roads): Resource roads serve a specific destination and connect to local, collector, or arterial road systems, and may dead-end at single well/service facilities or serve small numbers of wells or facilities. Depending on the level of activity, a resource road could serve light traffic and very heavy roads. Authorization and use of resource roads are at the discretion of the landowner or agencies. The maintenance objective for resource roads would be minimizing resource damage. A resource road would be abandoned and reclaimed once the road is no longer needed. Occasionally, a resource road could be stabilized and reverted back to a two-track.

General Implementation of the TPTSD

New linear features, realignments of existing routes, and maintenance of existing routes would be specified in annual operational updates. All routes would be selected to ensure safety, maximize transportation efficiency, to avoid sensitive resources, and to minimize road densities.

Before routes are selected and plans are prepared, the Operators would review available resources and land use data specific to the project area from the BLM, private landowners, other agencies, this document, and other sources. The BLM will determine the need for a registered engineer to be involved in locating and designing the road.

Initial consideration would be given to sensitive resources within the area which may affect the location and construction of proposed linear features. These may include (but are not limited to) wildlife, livestock, recreation, archaeology, paleontology, hydrology, and soils. Specific examples of sites, conditions, and resource concerns which may require consideration when locating linear features are raptor nesting areas, sage grouse leks, highly erodible soils, crucial winter range, and drainages.

Depending on the number of linear features or the complexity of a single linear feature, landowners, BLM engineers, or other consultants in conjunction with the Operators would determine the most feasible access route based on these data, drainage considerations, terrain, and standards for the type of route planned. The Operators would then submit to the BLM an APD, a Notice of Staking, or application for a ROW, with plans for the proposed route attached. There may be specific requirements for the design and construction of the route stipulated by the BLM or private landowner.

New Linear Features and Upgrades to Existing Linear Features

The following outlines the general process that would be used to develop a new route and/or improve existing routes. A specific order for implementing the process is presented below; however, alternate implementation procedures may be used in some areas, and some additional items may be added to the

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process. The information in the following steps is for well locations, roads, pipelines, and/or power lines. Flow charts have been developed to help guide transportation planners in the area.

1. Tentative annual development plans for the CD-C project area would be prepared and associated annual operational updates would be conducted; maps would be prepared as needed.
2. Roads, well locations, pipelines, power lines, and/or facility locations would be selected based on sensitive resources, environmental impacts, company plans, economics, geology, lease boundaries, and other data as necessary (Figure 1).
3. The EIS, Transportation Planning Appendix, the TPTSD, annual operational updates, BLM manuals 9112 and 9113, and current BLM policy would be reviewed by the Operators to determine design parameters and other requirements. Maps would be reviewed to determine which local and collector roads and other linear feature corridors would be used to access the well location or facility site.
4. The proposed road type would be selected; most would be local or resource roads. The type of road would determine the road design standards, and in some cases may influence the selection of the position of the road. As a general rule, resource roads would serve 3-15 wells, local roads would serve less than 50 wells, and collector roads would serve more than 50 wells. Many input parameters, including the pace of development, are used to determine the designation type of a road.
5. The impact of proposed well traffic on existing roads and the road network would be determined. With the addition of a new road, existing roads which serve the area may change in status (i.e. from a resource road to a local road) or become unnecessary. Only a portion of an existing road may change status. This is where the decisions of past road types influence the cost of constructing roads which serve newly proposed uses and traffic volumes. Better initial planning decreases the amount of road upgrading required.
6. An estimate of the length of the new or upgraded route would be made, and landownership would be determined. The proposed corridor would be identified on the map.
7. An on-site meeting would be held with the BLM Interdisciplinary Team (IDT), Operators, and private landowners, and negotiations would be initiated. Input would be obtained about the alignment, surfacing requirements, and the extent of design information required. Figure 2 provides guidelines for selecting surface material.
8. The identified corridor would be refined in an alignment. The necessary data for the design would be collected in the field and from appropriate maps.
9. The condition of existing local and/or collector access roads would be evaluated.
10. The APD and ROW application would be prepared and filed and would include a detailed ROW Plan of Development (POD) to expedite the BLM review process. Items to be included in or attached to the POD would include the road plan, pipeline location, etc.
11. State or county road access permits are required for new road approaches. Access information would be prepared and submitted to the appropriate agency; agency contacts are provided in an addendum to this document.

Guidelines for Selecting Linear Feature and Facility Locations

Consult FEIS and transportation planning documents



Get input from BLM specialists and/or landowner(s)



Survey and stake linear feature

Linear feature location should minimize:

- earth work
- sharp curves
- steep grades
- steep side slopes
- disturbance to poor soils
- hazardous alignments

Avoid:

- downwind side slopes
- duplicate routes
- under- or over-designed roads
- paralleling drainages
- archaeological sites
- wetlands/riparian areas
- springs/water developments
- crucial wildlife areas, ranges and migration routes
- low, flat areas with poor drainage
- sand dunes
- poor soils
- sensitive resource areas as identified in EISs or by the BLM, landowners, or other relevant public

Figure N-1. Guidelines for selecting linear feature and facility locations.

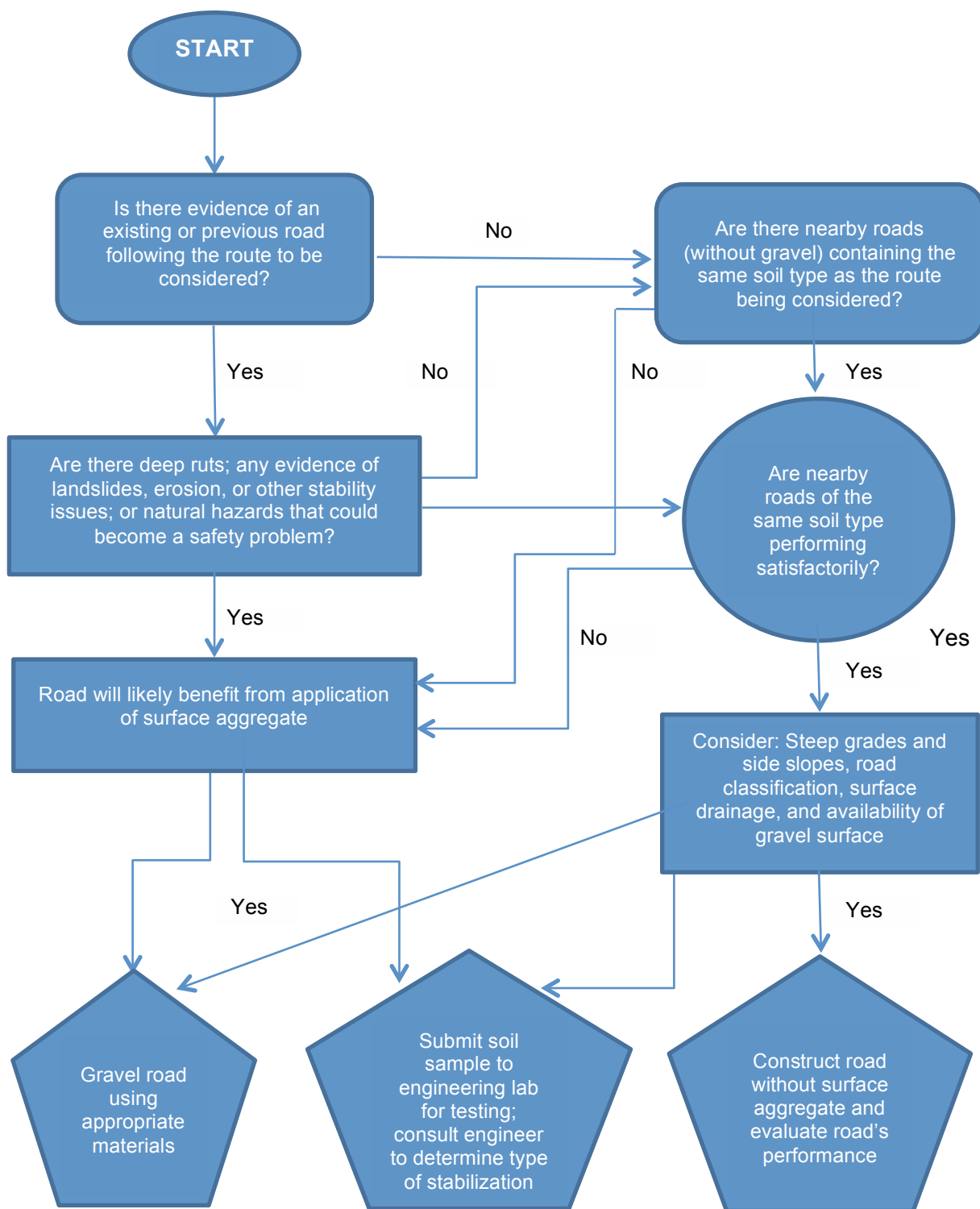


Figure N-2. Road surfacing decision flowchart.

Specifications and Plans

Roads

All roads to be built, improved, or rebuilt within the TPA on BLM lands would be constructed according to the required standards for designed roads (described below). Newly designed roads on federal lands or those requiring a federal undertaking would comply with the requirements of the BLM. The BLM requirements are detailed in BLM Manual Section 9113 Roads (BLM 1985) and the associated Wyoming state supplement (BLM 1991), as well as other BLM requirements. Roads on state or private land within the TPA would be built according to standards specified by the respective landowner, and may to the same standard as BLM roads.

Arterial roads: Arterial roads would be double-lane roads with shoulders and would be designed and constructed according to applicable federal, state, and/or county standards.

Collector roads: Collector roads would be double-lane roads and would be 24 feet wide after surfacing, with 4:1 ditches a minimum of 1 foot deep. These roads would have a gravel surface designed to support highway loads and provide a smooth compact road surface (without wash-boarding). Collector roads would be designed for a minimum travel speed of 35 mph.

Local roads: Local roads would be either double lane (20-24 feet wide after surfacing) or single lane (14-16 feet wide after surfacing) with turnouts and have 4:1 ditches a minimum of 1 foot deep. Gravel surfaces would be designed to support heavy loads in excess of standard highway loads. Depending on the length of the road, smoothness of the surface may be less important than the ability of the surface to transport heavy loads. Locals roads would be designed for speeds of 20-30 mph.

Resource roads: Resource roads would be single-lane roads with turnouts (14-16 feet wide after surfacing) with 4:1 ditches a minimum of 1 foot deep. Gravel, if needed, would be of sufficient quality to support heavy loads for short durations. The surface of a resource road is not required to be smooth. Resource roads would be designed for speeds of 15-30 mph.

All roads: All roads would be designed to provide for drainage and controlled runoff through construction of adequate culverts and drainage features; maintenance would be performed as necessary and as directed by the BLM.

Because each road is unique, it is not the purpose of this document to provide all of the technical data that may be necessary for every road. Each road construction project would be evaluated with its own requirements and appropriate technical information obtained during the annual transportation planning processes and subsequently processed APDs and ROW applications.

BLM Manual Section 9113 (BLM 1985) and its Wyoming state supplement (BLM 1991) contain the comprehensive technical requirements necessary for the design of roads on BLM-administered land. Where roads cross private lands, negotiations with private landowners would be necessary.

Surveying and staking necessary for road construction or improvement would be performed by or under the direction of Wyoming registered professional surveyors and/or engineers. Pursuant to state law, drawings with incorporated designs would require certification by a professional engineer. The complexity of the project would govern the amount of work, design, and inspection necessary.

Bridge, culvert, and low-water crossing designs would conform to the BLM Manual Section 9112 (BLM 1990a), U.S. Army Corps of Engineers (COE) regulations, Wyoming state law, and standard engineering practices. The COE would be consulted to obtain permits for crossing drainages. Culverts are to be aligned with the natural drainage and would comply with BLM Manual Sections 9112 and 9113, and the Wyoming State supplement. Low-water crossings may be used with BLM approval, when necessary, as a type of drainage crossing where a 10-year runoff design produces more runoff than can be reasonably handled with a drainage structure or when the cost of a structure is unreasonable. Bridges and major

culverts on BLM-administered land would conform to BLM standards including design by or under the direction of a qualified registered professional engineer. All drainage structures would be designed for a minimum of a HS-20 loading; bridges to be installed on county roads would require approval from the affected county Road and Bridge Department and WYDOT.

The unique qualities of the particular road and its location govern how the structure is designed and built. In general, road surfacing varies in thickness according to various design factors and availability of aggregate.

Right-of-Way, Maintenance, and Cooperative Agreements

ROW Grants and Agreements

Right-of-way grants and agreements would be required for linear features constructed across any land not controlled by the Operator. Procedures for obtaining and use of a ROW would follow BLM Manual 2801 Rights-of-Way Management (BLM 1996), BLM Handbook H-2801-1 Right-of-Way Plans for Development and Grants (BLM 1990b), and 43 Code of Federal Regulations (CFR) 2800.

When an Operator stakes a well and initiates a ROW application, the BLM would review the ROW application and would determine the terms and conditions that approval of the grant would be contingent upon. Acquisition of a ROW across private land can be obtained in several ways, including by payment of a one-time or annual fee, which is typically the most common. Deeds may be issued for some pipelines; this type of agreement allows the Operator that obtained access to pass over the land but requires other Operators to also obtain passage agreements. In some cases, ROWs are obtained from the private landowner by a company for themselves.

Maintenance Agreements

Maintenance agreements are usually binding contracts between Operators. The BLM generally does not enter into maintenance agreements with Operators. The preferred approach is for Operators to work together and adjudicate maintenance agreement amongst themselves. Operators would provide the BLM and counties with copies of all road maintenance agreements, including the name of the designated contact person.

Problems may occur when new Operators utilize the area; maintenance agreements must be revised to include new users. Operators drilling wells on private land may obtain a private landowner passage agreement but may not acquire ROWs from the BLM and may not participate with or even know about existing maintenance agreements. If an Operator is the first to drill in an area, that Operator may be the sole road maintainer until other Operators begin to access the area. Agreements are challenging for roads within the checkerboard landownership areas due to different well permit requirements. Agreements would be reviewed and budgets for maintenance prepared annually in association with the annual transportation planning process. Maintenance agreements would be held as necessary with all participants to review all road maintenance agreements. When Operators or other area users proposed new activities that utilize part or all of an existing road, the maintenance agreement for the existing road would be restructured to include the new users.

Maintenance agreements would contain grading and other maintenance schedules, participant responsibilities, and cost allocations. Agreements would describe response methods and primary and secondary emergency contacts for hazard maintenance.

Operator responsibilities for road maintenance can be divided into at least three types of agreements. The principle maintenance agreement type weights the maintenance cost share of each Operator according to the amount of projected use of the road. The projected use can be based on past use, number of producing wells and facilities down-road, and wet weather access needs. The maintenance contract would have each Operator's tallied amounts and commitments for the upcoming year. This agreement type would be the

most commonly used in the CD-C project area. Other types of agreements involve Operators conducting road maintenance on alternate time intervals or dividing a road into segments of near equal maintenance amounts and assigning each Operator maintenance responsibility for their segment of the road.

Snow removal is often considered a separate item. Some Operators may not need access to sites during winter months and may not participate in costs associated with snow removal. In some cases, roads may only need maintenance once or twice per year or at some other time interval.

Memorandum of Understanding

A non-binding Memorandum of Understanding (MOU) is primarily compiled to address concerns. It is anticipated that concerns identified during project development would be addressed and resolved, where possible, in consultation with the TPC as described later in this plan and the annual updates. MOUs do not form legally binding contracts among parties, but rather establish goals and present issues and concerns. An MOU amongst TPC participants will be developed to define the objectives and goals of the TPC. Other legal documents may result from parties negotiating a binding cooperative agreement. The localized yearly transportation development plans of Operators and linear feature classifications for development areas within the CD-C project area would be updated as specified by the BLM in annual operational updates. In addition, road densities would be identified, as would traffic management issues associated with other sensitive resources present in road development and use areas.

Meetings would be held as necessary, and would provide a forum for discussions among managers, land users, and administrators with diverse interests. Participants would voice concerns and propose solutions to conflicting activities. Mutually beneficial activities would be jointly planned for a desirable result. Proposed development activities would be discussed. Organizations represented at meetings likely would include Operators, private landowners, grazing permittees, lease holders, BLM, state government, and local governments.

Discussion topics for the meetings would include, but would not be limited to, the examples listed below.

1. Wildlife issues such as migration seasons and impacts from noise and other exploration/construction activities; as well as domestic animal grazing rotation schedules, would be discussed and coordinated to minimize disturbance;
2. Controlling, monitoring, and compensating for access would be discussed so that impacts from public access to private land are minimized;
3. Road development and/or upgrade plans would be discussed to ensure that the road networks serving portions of the CD-C project area are adequate. During these meetings, decisions would be made regarding the timing of construction and/or upgrading to accommodate anticipated traffic volumes.
4. Maintenance of access roads would be discussed. Agencies or companies that perform maintenance would express concerns and plan maintenance schedules. Solicitation of maintenance from other agencies for other roads may be discussed. Maintenance problem areas or areas that may be impassable during wet or snowy seasons would be discussed, and the amount and type of use would be determined.
5. Federal, state, and local agencies would review successes, problems, development plans, maintenance responsibilities, and ROW issues.
6. Roads no longer required for the project and roads identified by BLM specialists or others for closure would be identified, and road reclamation plans would be presented.

Road Maintenance

Roads in the project area would be maintained to the original design or better. State or county maintenance specifications would be applied on arterial roads, and alternative private landowner stipulations may be used on private lands. Maintenance on collector roads is anticipated to occur at least twice per year, whereas local and resource road maintenance may be required only once annually. All roads required for the proposed project would be maintained as necessary (e.g. grading, surface material application, snow plowing) and to control fugitive dust (e.g. application of water or dust suppressants). Operators would be responsible for these maintenance actions on their ROWs. Maintenance agreements developed among Operators would be provided to the BLM and counties. Where roads become impassable, the landowner or agency may deny access until the roads are repaired and/or the potential for resource damage is otherwise alleviated.

Roads in need of upgrading or maintenance would be identified and prioritized during annual TPC meetings.

Regular road maintenance would be necessary to mitigate environmental impacts and to provide a safe travel-way. Maintenance would be needed more frequently during drilling operations and/or inclement weather. The following items would be completed during maintenance:

1. Road crown and surface would be maintained to facilitate drainage, minimize erosion, and provide a safe travel-way. Some road surface problems that must be controlled are listed below:
 - a. During wet weather, maintenance would be necessary to repair rutting.
 - b. Large or sharp rocks, washboards, and loose gravel on road surface would be removed or otherwise repaired.
 - c. Slick and soft road segments would require the addition of surface aggregate. Steep grades, areas of steep side-slopes or deep drainage crossings, and sharp curves would be top priority for reconstruction and surfacing.
2. Culverts would be repaired or replaced where damaged and cleaned to prevent backup caused by debris and sedimentation. Clearing allows culverts to perform to their design capacity. Washouts may occur during high precipitation or seasonal runoff. Washouts would be repaired as soon as weather permits. Roads with washouts that do not have adequate detours to allow passage of vehicles would be closed until repairs are made. Detours or closures would be properly signed.
3. Low-water crossings would have regular maintenance for the following items:
 - a. The road surface in the channel crossing would be graded smooth and additional rock would be imported.
 - b. Debris and sediment would be removed from the surface of the road and debris dams would be removed from immediately upstream and downstream of the crossing.
 - c. Barrow ditches would be maintained clear and free-draining. In some cases, rip-rap maybe necessary to slow the erosion of ditches. If the stream is subject to regular floods, a depth gauge may be placed in the channel for motorists to judge the crossing safety. During winter months, it may be necessary to remove portions of ice accumulation within the channel crossing. In some cases, ice can be pushed upstream or downstream. Operator personnel would monitor the success of ice removal efforts and develop a working plan for future winter months. Reference to and consultation of COE permits, where necessary, would precede any in-channel maintenance work.

With appropriate road design (i.e. optimal route selection with elevated road beds that allow snow to blow from the road surface), minimal snow remove would be necessary; however, snow removal and winter maintenance may be necessary to access some producing wells and other ancillary facilities. For sites that

do not need regular maintenance, snowmobile or snow cats may be a winter access option. In these cases, travel would be restricted to approved routes and would not be allowed off-road in the CD-C project area.

Annual Planning and Operational Updates

Annual operational updates to the TPTSD would begin in 2014, and annual updates would be available each year in January until the project is completed or until the transportation system is so well-established that further annual planning is not needed.

To facilitate the planning process, a TPC is being established. The TPC will be composed of representatives from the BLM, Operators, Carbon and Sweetwater County Transportation Departments, Wyoming Department of Transportation, Wyoming Game and Fish Department, landowners, and grazing permittees. The committee will be responsible for overall transportation planning and for identifying and considering issues and concerns, whereas subcommittees would likely be established for the resolution of site-specific issues (e.g. operational/compliance issues, individual road maintenance, or construction problems). An MOU between participants of the TPC would be developed to define the objectives and goals of the group.

Annual transportation planning generally would be conducted to determine the location, required maintenance, and design criteria (e.g. road type) for linear features developed in the area. This process would involve annual Operator projections for well and ancillary facility developments, public input, and updates on sensitive resources. With this information, the TPC would assist in designing a linear feature network that accommodate Operator and other area user needs, minimizes potential impacts to sensitive environmental resources, and maximizes traffic flow efficiencies commensurate with existing and potential needs.

The existing transportation network in the area is generally suitable for existing uses; however, as areas with natural gas resource potential are further identified and developed, changes to the existing network would be required. Due to the infill nature of the proposed project, the development of larger arterial roads would likely not be necessary. The construction of smaller resource roads would dominate the new access construction in the area. Operators would be required to provide to the TPC annual projections specifying proposed well and facility site locations and associated traffic requirements (e.g. estimated number of round trips; duration of construction, drilling, and completion activities; vehicle size). This information would be provided to the TPC by approximately mid-October of each year for the life of the project (LOP) or until no longer required by the TPC. The TPC would evaluate this information, as well as known environmental constraints, other known uses of the area, and additional issues and concerns to develop tentative linear feature locations, types, and maintenance information. A draft update with maps would be developed by the TPC and submitted to area Operators and other relevant land users by approximately early November of each year. Meetings would then be held with the TPC to discuss modifications to the proposed update to accommodate Operator and other user concerns. Broad issues potentially affecting most area users would be discussed with the entire TPC, whereas site-specific operation, maintenance, or other specific road issues would be delegated for resolution to subcommittees. All issues associated with the annual operational updates would be resolved during November and December of each year. A final update that considers all comments would be prepared and available for review in January of each year.

Information that may be included in annual operational updates includes:

1. Location of all existing wells, roads, pipelines, power lines, and other natural gas related facilities in the area;
2. Location of all proposed wells, roads, pipelines, power lines, and other project-related features to be developed within the next year;
3. Location of all roads to be reclaimed within the next year;

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4. Anticipated traffic requirements for all existing and proposed developments;
5. Identification of existing roads that require upgrades to accommodate existing and proposed traffic requirements (careful planning would be required to ensure roads would be neither under- nor over-designed);
6. Identification of existing and required maintenance and associated maintenance, ROW, and cooperative agreements (including scheduling, responsible parties, and activities) for project-required roads;
7. Surfacing material source locations for road upgrades and maintenance;
8. Location of sensitive resources (e.g. drainages, raptor nests, sage grouse leks, etc.) and environmental obstacles (e.g. steep slopes, erosive soils). The precise location of some sensitive resources may not be presented in updates to prevent impacts (e.g. culture and paleontological sits, raptor nests); however, the location of those resources should be considered during the planning process;
9. Other identified transportation issues.

During the later years of the project (years 30-50) it is anticipated that annual updates primarily would identify well locations, ROWs, and other routes designated for abandonment and reclamation. Roads that remain after the LOP would become the responsibility of the BLM and/or private landowner. In addition, road upgrades of primary access routes would probably remain, and most resource roads developed for this project probably would be reclaimed unless they are determined necessary for other area uses as identified during annual planning.

ROAD CLOSURE IDENTIFICATION

- Any party can propose the closure of a route or route segment
- Minimum requirements:
 - Name of party proposing closure;
 - Map depicting route/route segment;
 - Existing type and condition of route/route segment;
 - Reasons for proposing closure, examples being:
 - Well plugged and abandoned
 - Duplicate route
 - Wildlife issues
 - Landowner issues
 - Operator issues
 - Engineering/design or traffic issues
 - Any other issues.

TPC RESPONSIBILITIES

- Identify surface ownership
- Identify permitted users (i.e. ROW, easements, agreements)
- Identify other users (casual use, recreationists)
- Address and evaluate need for closure:
 - Current or potential future need for route
 - Existence of potential alternative route, condition, and status
 - Environmental concerns, issues, benefits for closure and/or use of alternate route
 - Cultural resource concerns
 - Closure costs/cost sharing
 - Bonding issues.
- If parties agree to closure/alternate route usage, the following would apply:
 - Identify parties and responsibilities for closure/reclamation/alternate route(s)
 - Identify parties and responsibilities for environmental and cultural requirements
 - Identify existing conditions of approval, stipulations, and/or agreements for closure/reclamation
 - Obtain agreements among parties regarding desired results of closure/reclamation
 - Identify potential reclamation problems
 - Establish closure/reclamation timeframes
 - Implement follow-up monitoring and completion documentation.

Figure N-3. Procedures for existing route closure and/or reclamation.

Literature Cited

- BLM. 1985. Bureau of Land Management Manual Section 9113 Roads.
- BLM. 1990a. Bureau of Land Management Manual Section 9112.
- BLM. 1990b. Bureau of Land Management Manual Section H-2801-1 Rights-of-Way Plans of Development and Grants.
- BLM. 1991. Bureau of Land Management Manual Section 9113 Roads and Wyoming Supplement.
- BLM. 1996. Bureau of Land Management Manual Section 2801 Rights-of-Way Management.

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